

METHOD, APPARATUS, AND RECORDING MEDIUM FOR GENERATING ALBUM

BACKGROUND OF THE INVENTION

Field of the Invention

5 The present invention relates to a method and an apparatus for generating an album by arranging a plurality of images obtained by a digital camera in a desired layout. The present invention also relates to a computer-readable recording medium storing a program to cause a computer to execute the album generation method.

Description of the Related Art

10 Various methods of generating an album by arranging a plurality of images obtained by photographing in a desired layout have been proposed. For example, in a method proposed in Japanese Unexamined Patent Publication No. 3(1991)-274047, 15 images in frames of a film and photographing direction information recorded for each of the frames are read, and the images laid out on one sheet are printed by adjusting orientation of each of the frames based on the photographing direction information. Another method comprising the steps of reading 20 photographing information recorded for each of frames at the time of photographing and laying out the information together with images of the frames to generate an album has also been proposed (Japanese Unexamined Patent Publication No. 25 3(1991)-274857). Furthermore, a method of generating an album by arranging images owned by a user in a desired layout and

by further inserting characters and items of clip art has been known (Japanese Unexamined Patent Publication No. 7(1995)-184032). However, in these methods, the layout needs to be specified manually by a user, which leads to a complicated layout operation.

Therefore, another method of generating an album easing layout operation has been proposed (Japanese Unexamined Patent Publication No. 10(1998)-51576). In this method, upon printing a plurality of images on one sheet for generating an album, a user specifies the images to be printed and a layout thereof by using a mark sheet or the like, and information specifying the images and the layout is obtained by reading the mark sheet. Based on the information, the images are read from a film and the album having the images laid out therein is generated. According to this method, the user can obtain the album having the images by only specifying the images to be printed and where the images are arranged in the album.

However, in the method described in Japanese Unexamined Patent Publication No. 10(1998)-51576, the layout needs to be specified by a user. Since an impression of an album changes depending on how images are laid out therein, a user needs to spend time on a layout in order to obtain an album giving a preferable impression. If the user does not spend this time on the layout, only an album giving an ordinary impression is generated.

SUMMARY OF THE INVENTION

The present invention has been conceived based on consideration of the above problem. An object of the present invention is therefore to provide a method and an apparatus
5 for generating an album giving a preferable impression without spending much time thereon, and to provide a computer-readable recording medium storing a program to cause a computer to execute the album generation method.

An album generation method of the present invention is
10 a method of generating an album comprising a composite image in which a plurality of images obtained by a digital camera are arranged in a desired layout. In this method, the digital camera comprises image recording means for recording image data
15 sets representing the images in a recording medium with accompanying information regarding the image data sets added thereto, and the method comprises the steps of:

reading the image data sets and the accompanying
information added thereto from the recording medium; and

20 generating composite image data representing the composite image based on the accompanying information by inserting the respective images represented by the image data sets in image insertion areas of a template having the image insertion areas corresponding to the accompanying information.

The "accompanying information" refers to information on
25 the image data sets and can be added to the image data sets by the digital camera. The date of photographing, a location

of photographing, the kind of a subject, and a comment on a scene can be included as the accompanying information.

For "recording the image data sets in a recording medium with accompanying information added thereto", various methods can be used. For example, the accompanying information is recorded in a file header of each of the image data sets, or together with the image data sets in the same file such as a FlashPix file. Alternatively, the accompanying information and the image data sets are recorded in separate files by being related to each other. In the case where image data sets that are not used for an album are recorded in the recording medium, the accompanying information includes information indicating whether or not each of the image data sets is used for the album.

The "recording medium" can be a portable recording medium such as a memory card, an FD, or an MO disc. Alternatively, the recording medium can be a hard disc of a personal computer. The accompanying information and the image data sets are read from a portable recording medium by using a memory card reader or an FD drive, for example. Alternatively, the accompanying information and the image data sets are read from a hard disc of a personal computer via a network.

The "template" has the image insertion areas for insertion of the images in a desired layout. The image insertion areas are related to the accompanying information of the image data sets, and the images represented by the image data sets added with the accompanying information corresponding to the

respective image insertion areas are inserted therein. Not only the images but also a prepared comment on the images, a comment based on the accompanying information, and a clip art can be inserted, for example. Furthermore, the template may be recorded in the recording medium having the accompanying information and the image data sets or in another recording medium, and the template is read at the time of album generation. Alternatively, information specifying the template may be recorded in a recording medium described above so that the template can be read from template storing means such as a database storing a plurality of templates, with reference to the information specifying the template.

In the album generation method of the present invention, the template may be selected based on the accompanying information.

Furthermore, in the album generation method of the present invention, the composite image data may be generated by inserting the accompanying information together with the images in the template.

In the album generation method of the present invention, it is preferable for the digital camera to further comprise:

photographing means for obtaining image data representing a subject by photographing the subject;

storage means for storing recommended composition data sets representing images of recommended composition at various photographing locations by relating photographing information

including location information representing the photographing locations to the recommended composition data sets;

photographing information obtaining means for obtaining acquired photographing information;

5 reading means for reading a desired one of the recommended composition data sets related to the photographing information corresponding to the acquired photographing information from the storage means, based on the acquired photographing information obtained by the photographing information obtaining means; and

10 display means for displaying a recommended composition image represented by the desired recommended composition data set in superposition on an image represented by the image data obtained by the photographing means. In this case, the image recording means includes the acquired photographing information 15 in the accompanying information and adds the accompanying information to the image data obtained by the photographing means based on the recommended composition. In this manner, a plurality of sets of the image data having the accompanying 20 information are recorded in the recording medium.

The "storage means" may be a portable recording medium storing the recommended composition data sets for each photographing area or photographing purpose, or a recording medium wherein the recommended composition data sets can be 25 rewritten.

The "recommended composition" refers to an image

representing a notable scene or building to be photographed, for example. The recommended composition data sets may represent the recommended composition in color. However, in order to reduce the amount of data, image data having reduced contrast, binary image data, or monochrome image data may be used as the recommended composition data sets.

The "acquired photographing information" includes the location information representing the locations, information representing directions, information indicating the time and date, and weather information representing weather at the time of photographing, for example. Based on the acquired photographing information, the desired one of the recommended composition data sets can be read.

In this case, the "accompanying information" includes not only the location information, the direction information, the time and date information, and the weather information, but also a photographing condition (such as a focal distance and a diaphragm value) and a recommended composition ID indicating the recommended composition data set that has been read.

As the "display means", various means may be used. For example, a finder of a camera, or a liquid crystal display monitor thereof can be used.

In some cases, the image obtained by photographing according to the recommended composition is blurred or not preferable due to poor exposure or unfavorable weather, for

example. In such a case, it is preferable for the image data representing the undesired image to be replaced with prepared image data corresponding to the recommended composition.

5 An album generating apparatus of the present invention is an apparatus for generating an album having a composite image in which a plurality of images obtained by a digital camera are arranged in a desired layout. The digital camera comprises image recording means for recording image data sets representing the images and having accompanying information regarding the image data sets in a recording medium. The album generating apparatus comprises:

10 reading means for reading the image data sets and the accompanying information added thereto from the recording medium; and

15 composition means for generating composite image data representing the composite image based on the accompanying information by inserting the respective images represented by the image data sets into image insertion areas of a template having the image insertion areas corresponding to the
20 accompanying information.

It is preferable for the album generating apparatus of the present invention to further comprise template selecting means for selecting the template based on the accompanying information.

25 Furthermore, in the album generating apparatus of the present invention, it is preferable for the composition means

to generate the composite image data by inserting the accompanying information in the template in addition to the images.

In the album generating apparatus of the present invention,
5 it is preferable for the digital camera to further comprise:

photographing means for obtaining image data representing a subject by photographing the subject;

storage means for storing recommended composition data sets representing images of recommended composition at various photographing locations by relating photographing information including location information representing the photographing locations to the recommended composition data sets;

photographing information obtaining means for obtaining acquired photographing information;

10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
110
115
120
125
130
135
140
145
150
155
160
165
170
175
180
185
190
195
200
205
210
215
220
225
230
235
240
245
250
255
260
265
270
275
280
285
290
295
300
305
310
315
320
325
330
335
340
345
350
355
360
365
370
375
380
385
390
395
400
405
410
415
420
425
430
435
440
445
450
455
460
465
470
475
480
485
490
495
500
505
510
515
520
525
530
535
540
545
550
555
560
565
570
575
580
585
590
595
600
605
610
615
620
625
630
635
640
645
650
655
660
665
670
675
680
685
690
695
700
705
710
715
720
725
730
735
740
745
750
755
760
765
770
775
780
785
790
795
800
805
810
815
820
825
830
835
840
845
850
855
860
865
870
875
880
885
890
895
900
905
910
915
920
925
930
935
940
945
950
955
960
965
970
975
980
985
990
995
1000
1005
1010
1015
1020
1025
1030
1035
1040
1045
1050
1055
1060
1065
1070
1075
1080
1085
1090
1095
1100
1105
1110
1115
1120
1125
1130
1135
1140
1145
1150
1155
1160
1165
1170
1175
1180
1185
1190
1195
1200
1205
1210
1215
1220
1225
1230
1235
1240
1245
1250
1255
1260
1265
1270
1275
1280
1285
1290
1295
1300
1305
1310
1315
1320
1325
1330
1335
1340
1345
1350
1355
1360
1365
1370
1375
1380
1385
1390
1395
1400
1405
1410
1415
1420
1425
1430
1435
1440
1445
1450
1455
1460
1465
1470
1475
1480
1485
1490
1495
1500
1505
1510
1515
1520
1525
1530
1535
1540
1545
1550
1555
1560
1565
1570
1575
1580
1585
1590
1595
1600
1605
1610
1615
1620
1625
1630
1635
1640
1645
1650
1655
1660
1665
1670
1675
1680
1685
1690
1695
1700
1705
1710
1715
1720
1725
1730
1735
1740
1745
1750
1755
1760
1765
1770
1775
1780
1785
1790
1795
1800
1805
1810
1815
1820
1825
1830
1835
1840
1845
1850
1855
1860
1865
1870
1875
1880
1885
1890
1895
1900
1905
1910
1915
1920
1925
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055
2060
2065
2070
2075
2080
2085
2090
2095
2100
2105
2110
2115
2120
2125
2130
2135
2140
2145
2150
2155
2160
2165
2170
2175
2180
2185
2190
2195
2200
2205
2210
2215
2220
2225
2230
2235
2240
2245
2250
2255
2260
2265
2270
2275
2280
2285
2290
2295
2300
2305
2310
2315
2320
2325
2330
2335
2340
2345
2350
2355
2360
2365
2370
2375
2380
2385
2390
2395
2400
2405
2410
2415
2420
2425
2430
2435
2440
2445
2450
2455
2460
2465
2470
2475
2480
2485
2490
2495
2500
2505
2510
2515
2520
2525
2530
2535
2540
2545
2550
2555
2560
2565
2570
2575
2580
2585
2590
2595
2600
2605
2610
2615
2620
2625
2630
2635
2640
2645
2650
2655
2660
2665
2670
2675
2680
2685
2690
2695
2700
2705
2710
2715
2720
2725
2730
2735
2740
2745
2750
2755
2760
2765
2770
2775
2780
2785
2790
2795
2800
2805
2810
2815
2820
2825
2830
2835
2840
2845
2850
2855
2860
2865
2870
2875
2880
2885
2890
2895
2900
2905
2910
2915
2920
2925
2930
2935
2940
2945
2950
2955
2960
2965
2970
2975
2980
2985
2990
2995
3000
3005
3010
3015
3020
3025
3030
3035
3040
3045
3050
3055
3060
3065
3070
3075
3080
3085
3090
3095
3100
3105
3110
3115
3120
3125
3130
3135
3140
3145
3150
3155
3160
3165
3170
3175
3180
3185
3190
3195
3200
3205
3210
3215
3220
3225
3230
3235
3240
3245
3250
3255
3260
3265
3270
3275
3280
3285
3290
3295
3300
3305
3310
3315
3320
3325
3330
3335
3340
3345
3350
3355
3360
3365
3370
3375
3380
3385
3390
3395
3400
3405
3410
3415
3420
3425
3430
3435
3440
3445
3450
3455
3460
3465
3470
3475
3480
3485
3490
3495
3500
3505
3510
3515
3520
3525
3530
3535
3540
3545
3550
3555
3560
3565
3570
3575
3580
3585
3590
3595
3600
3605
3610
3615
3620
3625
3630
3635
3640
3645
3650
3655
3660
3665
3670
3675
3680
3685
3690
3695
3700
3705
3710
3715
3720
3725
3730
3735
3740
3745
3750
3755
3760
3765
3770
3775
3780
3785
3790
3795
3800
3805
3810
3815
3820
3825
3830
3835
3840
3845
3850
3855
3860
3865
3870
3875
3880
3885
3890
3895
3900
3905
3910
3915
3920
3925
3930
3935
3940
3945
3950
3955
3960
3965
3970
3975
3980
3985
3990
3995
4000
4005
4010
4015
4020
4025
4030
4035
4040
4045
4050
4055
4060
4065
4070
4075
4080
4085
4090
4095
4100
4105
4110
4115
4120
4125
4130
4135
4140
4145
4150
4155
4160
4165
4170
4175
4180
4185
4190
4195
4200
4205
4210
4215
4220
4225
4230
4235
4240
4245
4250
4255
4260
4265
4270
4275
4280
4285
4290
4295
4300
4305
4310
4315
4320
4325
4330
4335
4340
4345
4350
4355
4360
4365
4370
4375
4380
4385
4390
4395
4400
4405
4410
4415
4420
4425
4430
4435
4440
4445
4450
4455
4460
4465
4470
4475
4480
4485
4490
4495
4500
4505
4510
4515
4520
4525
4530
4535
4540
4545
4550
4555
4560
4565
4570
4575
4580
4585
4590
4595
4600
4605
4610
4615
4620
4625
4630
4635
4640
4645
4650
4655
4660
4665
4670
4675
4680
4685
4690
4695
4700
4705
4710
4715
4720
4725
4730
4735
4740
4745
4750
4755
4760
4765
4770
4775
4780
4785
4790
4795
4800
4805
4810
4815
4820
4825
4830
4835
4840
4845
4850
4855
4860
4865
4870
4875
4880
4885
4890
4895
4900
4905
4910
4915
4920
4925
4930
4935
4940
4945
4950
4955
4960
4965
4970
4975
4980
4985
4990
4995
5000
5005
5010
5015
5020
5025
5030
5035
5040
5045
5050
5055
5060
5065
5070
5075
5080
5085
5090
5095
5100
5105
5110
5115
5120
5125
5130
5135
5140
5145
5150
5155
5160
5165
5170
5175
5180
5185
5190
5195
5200
5205
5210
5215
5220
5225
5230
5235
5240
5245
5250
5255
5260
5265
5270
5275
5280
5285
5290
5295
5300
5305
5310
5315
5320
5325
5330
5335
5340
5345
5350
5355
5360
5365
5370
5375
5380
5385
5390
5395
5400
5405
5410
5415
5420
5425
5430
5435
5440
5445
5450
5455
5460
5465
5470
5475
5480
5485
5490
5495
5500
5505
5510
5515
5520
5525
5530
5535
5540
5545
5550
5555
5560
5565
5570
5575
5580
5585
5590
5595
5600
5605
5610
5615
5620
5625
5630
5635
5640
5645
5650
5655
5660
5665
5670
5675
5680
5685
5690
5695
5700
5705
5710
5715
5720
5725
5730
5735
5740
5745
5750
5755
5760
5765
5770
5775
5780
5785
5790
5795
5800
5805
5810
5815
5820
5825
5830
5835
5840
5845
5850
5855
5860
5865
5870
5875
5880
5885
5890
5895
5900
5905
5910
5915
5920
5925
5930
5935
5940
5945
5950
5955
5960
5965
5970
5975
5980
5985
5990
5995
6000
6005
6010
6015
6020
6025
6030
6035
6040
6045
6050
6055
6060
6065
6070
6075
6080
6085
6090
6095
6100
6105
6110
6115
6120
6125
6130
6135
6140
6145
6150
6155
6160
6165
6170
6175
6180
6185
6190
6195
6200
6205
6210
6215
6220
6225
6230
6235
6240
6245
6250
6255
6260
6265
6270
6275
6280
6285
6290
6295
6300
6305
6310
6315
6320
6325
6330
6335
6340
6345
6350
6355
6360
6365
6370
6375
6380
6385
6390
6395
6400
6405
6410
6415
6420
6425
6430
6435
6440
6445
6450
6455
6460
6465
6470
6475
6480
6485
6490
6495
6500
6505
6510
6515
6520
6525
6530
6535
6540
6545
6550
6555
6560
6565
6570
6575
6580
6585
6590
6595
6600
6605
6610
6615
6620
6625
6630
6635
6640
6645
6650
6655
6660
6665
6670
6675
6680
6685
6690
6695
6700
6705
6710
6715
6720
6725
6730
6735
6740
6745
6750
6755
6760
6765
6770
6775
6780
6785
6790
6795
6800
6805
6810
6815
6820
6825
6830
6835
6840
6845
6850
6855
6860
6865
6870
6875
6880
6885
6890
6895
6900
6905
6910
6915
6920
6925
6930
6935
6940
6945
6950
6955
6960
6965
6970
6975
6980
6985
6990
6995
7000
7005
7010
7015
7020
7025
7030
7035
7040
7045
7050
7055
7060
7065
7070
7075
7080
7085
7090
7095
7100
7105
7110
7115
7120
7125
7130
7135
7140
7145
7150
7155
7160
7165
7170
7175
7180
7185
7190
7195
7200
7205
7210
7215
7220
7225
7230
7235
7240
7245
7250
7255
7260
7265
7270
7275
7280
7285
7290
7295
7300
7305
7310
7315
7320
7325
7330
7335
7340
7345
7350
7355
7360
7365
7370
7375
7380
7385
7390
7395
7400
7405
7410
7415
7420
7425
7430
7435
7440
7445
7450
7455
7460
7465
7470
7475
7480
7485
7490
7495
7500
7505
7510
7515
7520
7525
7530
7535
7540
7545
7550
7555
7560
7565
7570
7575
7580
7585
7590
7595
7600
7605
7610
7615
7620
7625
7630
7635
7640
7645
7650
7655
7660
7665
7670
7675
7680
7685
7690
7695
7700
7705
7710
7715
7720
7725
7730
7735
7740
7745
7750
7755
7760
7765
7770
7775
7780
7785
7790
7795
7800
7805
7810
7815
7820
7825
7830
7835
7840
7845
7850
7855
7860
7865
7870
7875
7880
7885
7890
7895
7900
7905
7910
7915
7920
7925
7930
7935
7940
7945
7950
7955
7960
7965
7970
7975
7980
7985
7990
7995
8000
8005
8010
8015
8020
8025
8030
8035
8040
8045
8050
8055
8060
8065
8070
8075
8080
8085
8090
8095
8100
8105
8110
8115
8120
8125
8130
8135
8140
8145
8150
8155
8160
8165
8170
8175
8180
8185
8190
8195
8200
8205
8210
8215
8220
8225
8230
8235
8240
8245
8250
8255
8260
8265
8270
8275
8280
8285
8290
8295
8300
8305
8310
8315
8320
8325
8330
8335
8340
8345
8350
8355
8360
8365
8370
8375
8380
8385
8390
8395
8400
8405
8410
8415
8420
8425
8430
8435
8440
8445
8450
8455
8460
8465
8470
8475
8480
8485
8490
8495
8500
8505
8510
8515
8520
8525
8530
8535
8540
8545
8550
8555
8560
8565
8570
8575
8580
8585
8590
8595
8600
8605
8610
8615
8620
8625
8630
8635
8640
8645
8650
8655
8660
8665
8670
8675
8680
8685
8690
8695
8700
8705
8710
8715
8720
8725
8730
8735
8740
8745
8750
8755
8760
8765
8770
8775
8780
8785
8790
8795
8800
8805
8810
8815
8820
8825
8830
8835
8840
8845
8850
8855
8860
8865
8870
8875
8880
8885
8890
8895
8900
8905
8910
8915
8920
8925
8930
8935
8940
8945
8950
8955
8960
8965
8970
8975
8980
8985
8990
8995
9000
9005
9010
9015
9020
9025
9030
9035
9040
9045
9050
9055
9060
9065
9070
9075
9080
9085
9090
9095
9100
9105
9110
9115
9120
9125
9130
9135
9140
9145
9150
9155
9160
9165
9170
9175
9180
9185
9190
9195
9200
9205
9210
9215
9220
9225
9230
9235
9240
9245
9250
9255
9260
9265
9270
9275
9280
9285
9290
9295
9300
9305
9310
9315
9320
9325
9330
9335
9340
9345
9350
9355
9360
9365
9370
9375
9380
9385
9390
9395
9400
9405
9410
9415
9420
9425
9430
9435
9440
9445
9450
9455
9460
9465
9470
9475
9480
9485
9490
9495
9500
9505
9510
9515
9520
9525
9530
9535
9540
9545
9550
9555
9560
9565
9570
9575
9580
9585
9590
9595
9600
9605
9610
9615
9620
9625
9630
9635
9640
9645
9650
9655
9660
9665
9670
9675
9680
9685
9690
9695
9700
9705
9710
9715
9720
9725
9730
9735
9740
9745
9750
9755
9760
9765
9770
9775
9780
9785
9790
9795
9800
9805
9810
9815
9820
9825
9830
9835
9840
9845
9850
9855
9860
9865
9870
9875
9880
9885
9890
9895
9900
9905
9910
9915
9920
9925
9930
9935
9940
9945
9950
9955
9960
9965
9970
9975
9980
9985
9990
9995
10000
10005
10010
10015
10020
10025
10030
10035
10040
10045
10050
10055
10060
10065
10070
10075
10080
10085
10090
10095
10100
10105
10110
10115
10120
10125
10130
10135
10140
10145
10150
10155
10160
10165
10170
10175
10180
10185
10190
10195
10200
10205
10210
10215
10220

information to the image data obtained by the photographing means based on the recommended composition. In this manner, a plurality of sets of the image data having the accompanying information are recorded in the recording medium.

5 In this case, it is preferable for the composition means to enable replacement of the image data obtained according to the desired recommended composition data set with prepared image data corresponding to the desired recommended composition data set.

10 The album generation method of the present invention may be provided as a program recorded in a computer-readable recording medium to cause a computer to execute the method.

15 According to the present invention, the image data sets are obtained by photographing the images with the digital camera, and the accompanying information related to the image data sets is recorded in the recording medium by being added to the image data sets. The image data sets and the accompanying information are read from the recording medium, and the images represented by the image data sets are inserted in the respective image
20 insertion areas of the template with reference to the accompanying information. Since the template has the image insertion areas set in accordance with the accompanying information, the image data sets can be related to the image insertion areas of the template according to the accompanying
25 information. The images are inserted in the respective image insertion areas corresponding thereto, and the composite image

is generated. In this manner, a user can generate the composite image data by simply recording the image data sets having the accompanying information added thereto in the recording medium at the time of photographing with the digital camera and by selecting the template. Therefore, the user can obtain the album giving a preferable impression by printing the composite image data, without spending time on the layout.

Furthermore, by inserting the accompanying information in the template together with the images, information on the images inserted in the image insertion areas of the template can be recognized in the album.

Moreover, the acquired photographing information including the location information representing the location of a photographer (the user) having the digital camera is obtained by the photographing information obtaining means, and the desired recommended composition data set related to the photographing information corresponding to the acquired photographing information is read from the storage means based on the acquired photographing information. The recommended composition image represented by the recommended composition data set and the image represented by the image data obtained by the photographing means are superposed and displayed on the display means. The recommended composition data set is related to the photographing information including the location information representing the photographing location. The recommended composition data set also represents the image of

the recommended composition at the photographing location. Therefore, the recommended composition image displayed on the display means represents the recommended composition image to be photographed at the location of the photographer having the digital camera. The photographer can therefore confirm the image necessary for the album at his/her location by viewing the display means, and photographing can be carried out by using the recommended composition regardless of the skills of the photographer if the photographer only causes the image represented by the image data obtained by the photographing means to agree with the recommended composition image. In this manner, photographing can be carried out without losing a chance to photograph the image necessary for the album. Moreover, since the acquired photographing information is included in the accompanying information, the layout of the images in the template can be determined based on the photographing information, by relating the photographing information to the respective image insertion areas of the template.

In some cases, the image obtained by photographing according to the recommended composition is blurred or not preferable due to poor exposure or unfavorable weather, for example. Furthermore, the user may forget photographing. In such a case, a preferable image can be included in the album by replacing the undesired image with another prepared image corresponding to the recommended composition or by inserting another prepared image in the image insertion area corresponding

to the image whose photographing was not carried out.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a block diagram showing a configuration of an image output system adopting an album generating apparatus
5 as a first embodiment of the present invention;

Figure 2 is a block diagram showing a configuration of a camera used in the first embodiment;

Figure 3 shows thumbnail images of templates displayed on a personal computer of a user;

10 Figure 4 shows an example of a recommended composition image;

Figure 5 shows an example of an image that is going to be photographed;

Figure 6 shows an example of a superposition image;

15 Figure 7 is a flow chart showing operation of the camera;

Figure 8 shows template examples;

Figure 9 is a flow chart showing operation of the first embodiment;

20 Figure 10 is a block diagram showing a configuration of an image output system adopting an album generating apparatus as a second embodiment of the present invention;

Figure 11 shows a menu for selecting recommended composition;

25 Figure 12 is a block diagram showing a configuration of an image output system adopting an album generating apparatus as a third embodiment of the present invention;

Figure 13 is a table indicating recommended composition IDs to be used for insertion in image insertion areas of templates;

Figure 14 shows an example of description of accompanying information in a template; and

Figure 15 shows another example of description of the accompanying information in a template.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Hereinafter, embodiments of the present invention will be explained with reference to the accompanying drawings.

Figure 1 is a block diagram showing a configuration of an image output system adopting an album generating apparatus as a first embodiment of the present invention. The image output system in this embodiment is installed in a laboratory for carrying out printing based on users' requests. As shown in Figure 1, the image output system in the first embodiment comprises album generating means 12 for generating composite image data M used for an album based on a plurality of sets of image data S0 obtained by a camera that will be explained later, a printer 13 for printing the composite image data M, a monitor 14 such as a CRT display or a liquid crystal display for displaying the image data sets S0, the composite image data M and the like, and input means 15 comprising a mouse, a keyboard and the like for carrying out various kinds of inputs to the album generating means 12.

The album generating means 12 comprises data reading means

21 for reading the image data sets S0 and accompanying information H from a recording medium 11 storing the image data sets S0 and the accompanying information H added to the image data sets by the camera, template storing means 22 for storing template data sets T representing a plurality of templates (hereinafter the templates are also called T), and composition means 23 for generating the composite image data M by arranging images represented by the image data sets S0 (hereinafter the images are also called S0) in the templates T represented by the template data sets T read from the template storing means 22.

The camera that records the image data sets S0 and the accompanying information H in the recording medium 11 will be explained below. Figure 2 is a block diagram showing a configuration of the camera used in this embodiment. As shown in Figure 2, the camera comprises photographing means 1 for obtaining each set of the image data S0 representing a subject by photographing the subject, a frame memory 2 for temporarily storing the image data set S0, GPS means 3 for obtaining GPS information G based on global positioning radio waves from GPS satellites, recommended composition storing means 4 for storing recommended composition data sets R0 representing a plurality of images having recommended composition at respective photographing locations by relating the recommended composition data sets R0 with location information representing the respective photographing locations, reading means 5 for reading, from the recommended composition storing means 4, one of the

recommended composition data sets R0 related to the location information agreeing with the GPS information G obtained by the GPS means 3, a frame memory 6 for temporarily storing the recommended composition data set R0, superposition means 7 for obtaining superposition image data C0 by superposing the image data set S0 with the recommended composition data set R0, display means 8 for displaying the superposition image data C0, an alarm 9 for sounding an alarm when the reading means 5 reads the recommended composition data set R0, and recording means 10 for recording the image data set S0 obtained by photographing in the recording medium 11.

The photographing means 1 comprises various kinds of means necessary for photographing, such as CCDs, an imaging optical system, a shutter, a zooming mechanism, an AE mechanism, and an AF mechanism.

The GPS means 3 obtains information on the photographing location, a photographing direction, and the time and date of photographing as the GPS information G by using the global positioning radio waves from the GPS satellites. The photographing location is a position at which the camera in this embodiment is located, that is, a position where a photographer (user) is. The photographing direction refers to the direction to which the camera in this embodiment is directed.

The recommended composition storing means 4 is a portable recording medium storing the recommended composition data sets

R0 classified for each photographing area or photographing purpose. The recommended composition storing means 4 is provided from the laboratory to the user and the user uses the recommended composition storing means 4 after setting the means
5 to the camera. The recommended composition data sets R0 represent images of recommended composition to be used for photographing at sightseeing spots, for example. The recommended composition data sets R0 are stored in the recommended composition storing means 4 in relation to the location information of the recommended composition. For example, if the recommended composition storing means 4 is for Kyoto, the recommended composition images represent images of the recommended composition for photographing at sightseeing spots such as Kinkakuji temple and Kiyomizudara temple, and are related to latitude and longitude of the sightseeing spots.

The recommended composition storing means 4 stores template information indicating a desired one of the templates T to be used for generating the album. The desired template is selected by the user in advance and the template information
20 is stored in the recommended composition storing means 4 before the recommended composition storing means 4 is provided from the laboratory to the user. As the template information, a template number can be used, for example. In this case, the recommended composition storing means 4 stores the recommended
25 composition data sets R0 representing the composition necessary for the album, and the number of the recommended composition

data sets R0 is in accordance with the number of images to be inserted in the template selected by the user.

The recommended composition storing means 4 may be a rewritable recording medium fixed to the camera so that the recommended composition data sets R0 for a photographing area or a photographing purpose desired by the photographer can be stored in the recommended composition storing means 4 by being written therein. For example, the recommended composition data sets R0 are stored in a database of the laboratory and the user accesses the database to download the desired recommended composition data sets R0. The downloaded data sets R0 are written in the recommended composition storing means 4 and stored therein.

Thumbnail images of the recommended composition images in accordance with the desired photographing area or purpose may be displayed on a personal computer of the user before downloading so that the user can make a selection therefrom to download the recommended composition data sets R0. In this case, thumbnail images of the templates having the recommended composition images laid out therein are displayed on the personal computer of the user after downloading, as shown in Figure 3. In this manner, the user selects the desired one of the templates T from the thumbnail images and the template information indicating the selected template is stored in the recommended composition storing means 4.

The templates T may be related to the recommended

composition data sets R0, and the thumbnail images shown in Figure 3 may be displayed on the personal computer of the user. After the selection of the desired thumbnail image of the template, the recommended composition data sets R0 corresponding to the selected template are downloaded in this case. Furthermore, only the recommended composition data sets R0 may be stored in the recommended composition storing means 4. In this case, the recording means 10 which will be explained later records the template information in the recording medium 11 by using input means of the camera not shown in Figure 2.

The template information may not be recorded in the recording medium 11. In this case, the user notifies the laboratory of the template to be used. Upon generating the album, the template information is input to the album generating means 12 from the input means 15 by an operator of the laboratory.

In this embodiment, the recommended composition data sets R0 representing the recommended composition corresponding to a tour course determined in Europe and the templates using the recommended composition are stored in the recommended composition storing means 4.

The reading means 5 searches the recommended composition storing means 4 for the recommended composition data set R0 corresponding to the location information included in the GPS information G, and the reads the recommended composition data set R0 corresponding to the location information from the recommended composition storing means 4. The recommended

composition data set R0 is temporarily stored in the frame memory
6.

The superposition means 7 obtains the superposition image
data C0 by superposing the image data set S0 with the recommended
5 composition data set R0. For example, in the case where the
recommended composition image (hereinafter the recommended
composition image is also called R0) represented by the
recommended composition data set R0 is as shown in Figure 4
and the image S0 represented by the image data set S0 is as
10 shown in Figure 5, the superposition image (hereinafter the
superposition image is also called C0) represented by the
superposition image data C0 obtained by the superposition means
7 is as shown in Figure 6. The superposition image C0 is displayed
on the display means 8. By setting the contrast of the
15 recommended composition image represented by the recommended
composition data set R0 lower than the contrast of the image
represented by the image data set S0, the image S0 becomes easier
to see. The recommended composition image may be a monochrome
image or a binary image. The recommended composition images
20 R0 may be stored in the recommended composition storing means
4 as data sets of low-contrast images, monochrome images, binary
images, or images comprising outlines only, for example.

The display means 8 is a liquid crystal panel installed
in the camera in this embodiment. Instead of the liquid crystal
25 panel, a finder may be installed in the camera as the display
means so that the images can be displayed therein.

The alarm 9 sounds an alarm by detecting a fact that the reading means 5 has read the recommended composition data set R0, and notifies the photographer of a fact that he/she is at the photographing location of the recommended composition. A voice may be used instead of the alarm. Alternatively, the fact that the photographer is at the location may be displayed on the display means 8, or vibration may be used to notify the photographer of the fact.

The recording means 10 records the image data set S0 obtained by photographing and the accompanying information H thereof in the recording medium 11. The accompanying information H includes the GPS information G obtained by the GPS means 3, a comment on the image displayed on the display means 8 made by the user with the input means not shown, and a file number of the image data set S0. The accompanying information H may be recorded in a file header of the image data set S0 or in the same file as the image data set S0 as in the case of a FlashPix format file, or in a file separate from the file of the image data set S0 by being related to the image data set S0.

Operation of the camera shown in Figure 2 will be explained next. Figure 7 is a flow chart showing the operation of the camera shown in Figure 2. In this embodiment, the photographer holds the camera and the photographing means 1 is initially switched off while the GPS means 3 is on.

The GPS means 3 obtains the GPS information G based on

the global positioning radio waves from the GPS satellites (Step S1). The reading means 5 searches for the recommended composition data set R0 stored in the recommended composition storing means 4 based on the location information included in the GPS information G (Step S2). Whether or not the recommended composition data set R0 corresponding to the location information of the GPS information G is stored in the recommended composition storing means 4 is judged (Step S3). When a result at Step S3 is negative, the procedure returns to Step S1, and the processing from Step S1 to S3 is repeated. When the result at Step S3 is affirmative, the recommended composition data set R0 is read from the recommended composition storing means 4 (Step S4), and input to the superposition means 7 after temporarily stored in the frame memory 6. When the recommended composition data set R0 is read from the recommended composition storing means 4, the alarm 9 alarms (Step S5). In this embodiment, the recommended composition data set R0 representing the recommended composition image shown in Figure 4 is read. The photographer switches the photographing means 1 on after hearing the alarm (Step S6), and the alarm is turned off when the photographing means 1 is switched on (Step S7).

When the photographing means 1 is set, the image data set S0 representing the image to be photographed by the photographing means 1 is temporarily stored in the frame memory 2 while input to the superposition means 7 for real time display on the display means 8. The superposition means 7 superposes

the recommended composition image R0 with the image S0 represented by the image data set S0 (Step S8), and displays the superposition image C0 shown in Figure 6 on the display means 8 (Step S9).

5 The photographer adjusts the direction of photographing and the zoom function while viewing the superposition image C0 displayed on the display means 8, and causes the image S0 to agree with the recommended composition image R0. When the shutter is pressed while the image S0 is in accordance with the recommended composition image R0 (Step S10), photographing is carried out and the image data set S0 added with the accompanying information H is recorded in the recording medium 11 by the recording means 10 (Step S11) to end the procedure. Superposition and display of the image S0 to be photographed by the photographing means 1 and the recommended composition image R0 are repeatedly carried out until the shutter is pressed. If necessary, the image S0 is displayed on the display means 8 and information regarding a comment on the image S0 or regarding whether the image S0 is used for the album may be input by the input means, not shown. This information is included in the accompanying information H.

Photographing is carried out for all the recommended composition images R0, and the sets of the image data S0 corresponding to the respective recommended composition images are related to the accompanying information H and recorded in the recording medium 11. The template information stored in

the recommended composition storing means 4 is read from the recommended composition storing means 4 and recorded in the recording medium 11. In the case where the template information is not recorded in the recommended composition storing means 4, the template information input from the input means not shown is recorded in the recording medium 11. The template information may be recorded in a recording medium other than the recording medium 11. In this embodiment, only the images S0 corresponding to the recommended composition images R0 are photographed and the image data sets S0 whose number agrees with the number of the recommended composition data sets R0 are recorded in the recording medium 11.

The data reading means 21 of the album generating means 12 shown in Figure 1 reads the image data sets S0 and the accompanying information H from the recording medium 11, and inputs the image data sets S0 and the accompanying information H to the composition means 23. In the case where the template information is also recorded in the recording medium 11, the template information is also read therefrom by the data reading means 21 and input to the composition means 23. In the case where the template information is recorded in a recording medium separate from the recording medium 11, the template information is read therefrom. In the case where the template information is not recorded in either the recording medium 11 or the separate recording medium, the template information specified by the user in advance is input from the input means 15 by the operator.

The composition means 23 reads the template data set representing the template corresponding to the template information. Figure 8 shows examples of the templates T. As shown in Figure 8, an album of a trip to Europe is generated by using two templates T1 and T2. The template T1 has four image insertion areas A1~A4, an area A5 for inserting a caption, and an area A6 for inserting a clip art. The template T2 includes five image insertion areas A7~A11, an area A12 for inserting a caption, and an area A13 for inserting a clip art. Areas for inserting the accompanying information H are also available as shown by hatched lines at the bottom of the image insertion areas in Figure 8.

The image insertion areas A1~A4 and A7~A11 in the templates T1 and T2 are related to the accompanying information H. For example, the image data sets S0 in the recording medium 11 correspond to the tour course in the trip to Europe in this embodiment, and the order of photographing is also determined according to places to visit in the tour. Therefore, if the image data sets S0 are arranged based on the information on the photographing time and date of the accompanying information H added to the image data sets S0, the order of the image data sets S0 corresponds to the order of the places visited in the tour. Consequently, if the templates are set for image insertion in the image insertion areas A1~A4 and A7~A11 in chronological order, the images S0 obtained by the user are inserted in the templates T1 and T2 without consideration of

arrangement of the images by the user, if the image data sets S0 input to the composition means 23 are simply inserted in the image insertion areas A1-A4 and A7-A11 in chronological order with reference to the accompanying information H.

5 The accompanying information H includes the location information representing latitude and longitude of the photographing location based on the GPS information G. Therefore, the image insertion areas A1-A4 and A7-A11 may be related to the location information so that the images S0 having the corresponding location information can be inserted in the
10 respective image insertion areas.

 The accompanying information H includes the comment made by the user, in addition to the photographing location and the time and date of photographing, for example. The accompanying
15 information H is inserted in the areas shown by the hatched lines at the bottom of the image insertion areas A1-A4 and A7-A11. Meanwhile, the captions prepared with regard to the inserted images are inserted in the areas A5 and A12, and the clip arts are also inserted in the areas A6 and A13. The captions and
20 the clip arts may be predetermined or selected by the user from a plurality of samples, or generated by the user.

 As has been described above, the composite image data M are generated by inserting the images, the captions and the clip arts in the templates.

25 Since the image insertion area A10 in the template T2 is larger than the other image insertion areas, the most

impressive one of the images may be inserted therein in some cases. In such a case, the image S0 desired by the user is displayed on the display means 8, and information indicating that the image S0 is inserted in the image insertion area A10 in the template T2 is input by the camera and included in the accompanying information H. In this manner, the composition means 23 can insert, in the image insertion area A10 in the template T2, the image S0 having this information in the accompanying information. In this case, the other images are inserted in chronological order in the image insertion areas excluding the image insertion area A10.

Operation of this embodiment will be explained next. Figure 9 is a flow chart showing the operation of this embodiment. The data reading means 21 reads the image data sets S0 and the accompanying information H thereof from the recording medium 11 (Step S21). The image data sets S0 and the accompanying information H are input to the composition means 23. The composition means 23 reads the templates from the template storing means 22 based on the template information stored in the recording medium 11 or input from the input means 15 or the like (Step S22). The images S0 represented by the image data sets S0 are inserted in the templates based on the accompanying information H (Step S23), and the captions and the clip arts are also inserted to generate the composite image data M (Step S24). The composite image data M are input to the printer 13 and output as the album (Step S25) to end the

procedure.

As has been described above, in this embodiment, the image data sets S0 of the images corresponding to the recommended composition to be inserted in the templates are obtained by the camera shown in Figure 2, and recorded in the recording medium 11 together with the accompanying information H thereof. The image data sets S0 and the accompanying information H are read from the recording medium 11, and the images S0 represented by the image data sets S0 are arranged in the templates based on the accompanying information H. Since the image insertion areas of the templates are related to the accompanying information H added to the image data sets S0, the composition means 23 generates the composite image data M by inserting, in the image insertion areas, the images S0 having the accompanying information H corresponding to the respective image insertion areas of the templates. Therefore, the user can obtain the album having the photographed images arranged therein, by simply selecting the templates and photographing the images in accordance with the recommended composition, without selecting the images and the layout thereof. In this manner, the user can spare time upon album generation.

A second embodiment of the present invention will be explained next. Figure 10 is a block diagram showing a configuration of an image output system adopting an album generating apparatus as the second embodiment of the present invention. In the second embodiment, the same elements as the

elements in the first embodiment have the same reference numerals, and detailed explanation thereof is omitted. In the second embodiment, storage means 24 is used for storing image data sets SK representing images corresponding to recommended composition and photographed in a preferable condition. Composite image data M generated by composition means 23 are temporarily displayed on a monitor 14 and a composite image is confirmed thereby. In the case where an undesired image is included in the composite image, the image is replaced with one of the images photographed in a preferable condition.

For example, if a tour course includes the Louvre and the recommended composition image at the Louvre is Mona Lisa, photographing the painting of Mona Lisa is desired. However, the painting is in the museum and use of flash is not allowed. Therefore, only a dark image of Mona Lisa may be obtained when photographing is actually carried out. For this reason, one of the image data sets SK representing the painting of Mona Lisa obtained by using a bright lens and a high-speed film is prepared in the storage means 24. If the photographed image of Mona Lisa is not preferable when the composite image is confirmed on the monitor 14, the image is replaced with the image represented by the image data set SK.

Meanwhile, in the case where Mout Blanc is included in the tour course but the mountain is covered with cloud at the time of photographing due to changeable mountain weather, or in the case where a desired image of the mountain cannot be

obtained due to unfavorable weather, one of the image data sets SK representing an image of Mout Blanc obtained by photographing in a preferable weather at almost the same time of the day and year is prepared in the storage means 24, and the undesired
5 image of Mont Blanc is replaced with the image represented by the image data set SK when the composite image is confirmed on the monitor 14.

By replacing the undesired image in the composite image with the image obtained in a preferable condition, the album giving a preferable impression can be generated.

10 In the above embodiments, the alarm 9 of the camera notifies the photographer of the location of the recommended composition. However, photographing the image of the recommended composition may be forgotten in some cases. Therefore, when the images
15 are inserted in the image insertion areas of the templates in chronological order upon generating the album, the last image insertion area (for example, the insertion area A11 of the template T2) is not filled when a photographing chance is missed for one of the images to be inserted. In this case, the empty
20 insertion area may be left as it is. However, it is preferable for the blank insertion area to be filled with a preferable image prepared in advance.

In the case where the images are inserted in the image insertion areas of the templates based on the location
25 information, if a photographing opportunity of the image to be inserted in the image insertion area A7 of the template T2

is missed for example, the image insertion area A7 becomes blank. In this case, the image insertion area A7 may stay blank. However, the image insertion area A11 may become blank by shifting the images to be inserted in the image insertion areas A8 to A11 one by one. Alternatively, as in the second embodiment, one of the images photographed in a preferable condition may be inserted in the image insertion area A7.

In the above embodiments, if the recommended composition image R0 is an image in a building such as a museum, the global positioning radio waves from the GPS satellites may not be received by the GPS means 3 of the camera. In such a case, the display means 8 cannot display the recommended composition image R0. Therefore, a selection menu of the recommended composition images R0, such as a menu shown in Figure 11, may be displayed on the display means 8 when the GPS means 3 does not detect the radio waves. For example, if the photographer enters the Louvre, his/her entrance can be detected by the GPS means 3. Therefore, a selection mode of the recommended composition images R0 for the Louvre is displayed on the display means 8, as shown in Figure 11. Since the Louvre has three buildings, namely Richelieu, Denon, and Sully, pull-down menus for these are displayed. Denon is selected therefrom, for example, and "second floor" is further selected. A menu including Mona Lisa, Victory of Samothrace, 16th-century Italian paintings, and the like exhibited on the second floor of Denon is then displayed. When the photographer selects Mona

Lisa, for example, the recommended composition image of Mona Lisa is displayed on the display means 8. Therefore, the photographer can photograph the image of the recommended composition even if the GPS means 3 cannot receive the global positioning radio waves.

Furthermore, in the above embodiments, only the image data sets S0 whose quantity agrees with the number of the image insertion areas of the templates are recorded in the recording medium 11 by the camera. However, a plurality of images may be photographed for any one of the recommended composition images. Moreover, the photographer may photograph images without using the recommended composition. In such a case, the images are displayed on the display means 8 of the camera, and the user selects a desired one of the images. Information indicating that the image is used for the album is added to the accompanying information H corresponding to the image data set representing the image. In this manner, the composition means 23 generates the composite image data M by using only the image data sets S0 having this information in the accompanying information H.

Moreover, in the above embodiments, the images are inserted in the image insertion areas of the templates in chronological order based on the information of the photographing time and date. However, this order can be changed arbitrarily. More specifically, the images are displayed on the display means 8 of the camera and information indicating the insertion order is included in the accompanying information

H. The composition means 23 inserts the images in the image insertion areas of the templates based on the information indicating the insertion order.

In the above embodiments, the template data sets T are stored in the template storing means 22, and the template data sets corresponding to the template information are read therefrom. However, the template data sets may be recorded in the recording medium 11 so that the data reading means 21 can read the template data sets in addition to the image data sets S0 and the accompanying information H. Alternatively, the template data sets may be recorded in a recording medium other than the recording medium 11 so that the data reading means 21 can read the template data sets from the recording medium. In this case, the template data sets may be stored in the personal computer of the user or provided from the laboratory to the user by being recorded in a recording medium or via a network. The template data sets may also be provided to the user by being recorded in the recommended composition storing means 4.

In the above embodiments, the template number is used as the template information. However, file names of the templates T can also be used.

In the above embodiments, the album is generated by using the image data sets S0 obtained by the camera shown in Figure 2 for carrying out photographing according to the recommended composition based on the GPS information G. However, the image

data sets used for album generation are not limited to the image data sets obtained by such a camera. For example, since image data obtained by a digital camera have information on the photographing time and date, this information can be used as the accompanying information H for inserting images in the templates as in the above embodiments. In this case, by adding information indicating future use for album generation to the image data to be inserted in the templates, the composition means 23 can read the accompanying information H and generate the composite image data M by using the image data sets S0 having the information indicating the use.

In the above embodiment, the templates are pre-selected and photographing is carried out according to the layout of the templates. However, the templates may be selected for the album after photographing is carried out based on the recommended composition. Hereinafter, this example will be explained as a third embodiment.

Figure 12 is a block diagram showing a configuration of an image output system adopting an album generating apparatus as the third embodiment of the present invention. In the third embodiment, the same elements as in the first embodiment have the same reference numerals and detailed explanation thereof is omitted. In the third embodiment, the image output system comprises template selecting means 25 for selecting one of templates T to be used for generation of composite image data M from the templates stored in template storing means 22 based

on accompanying information H read by data reading means 21,
and temporary template storing means 26 for temporarily storing
the selected template T. Based on the accompanying information
H, the template T is selected and the composite image data M
5 are generated based on the selected template T.

In the third embodiment, recommended composition data
sets R0 related to the accompanying information H having
recommended time and weather for photographing and a recommended
photographing condition are stored in recommended composition
storing means 4 of a digital camera. One of the recommended
10 composition data sets R0 corresponding to a photographing
location, photographing time and/or weather is read based not
only on location information included in GPS information G but
also time information and weather information at the time of
photographing, and image data S0 are obtained by photographing
15 according to the recommended composition data set. At this
time, the accompanying information H includes a recommended
composition ID for specifying the recommended composition data
set R0 used for photographing, the GPS information G, the weather
20 information at the time of photographing, and the photographing
condition. Each of the templates T is stored in the template
storing means 22 in a state where the recommended composition
ID for specifying a recommended composition image to be inserted
in an image insertion area thereof is related to the template
25 as accompanying information H0 of the template. The
accompanying information H0 is added to tag information of the

corresponding template.

The recommended composition ID represents a location at which photographing using the recommended composition data set is recommended and a recommended composition number at the location. For example, let a, b, c, ... represent a location x and let 1, 2, 3, ... represent a composition number i. The recommended composition ID for the recommended composition data set can be expressed as Fxi. If an identifier of each of the templates T is I, II, III, ..., and if image insertion areas thereof are expressed as (1), (2), (3), ..., each of the templates T is stored in the template storing means 22 with each of the image insertion areas thereof being related to the recommended composition ID to be inserted in the image insertion area, as shown in a table in Figure 13.

For example, information corresponding to a row of a template I in the table in Figure 13 is added to the template I as the accompanying information H0. More specifically, as shown in Figure 14, the accompanying information H0 is described in the tag information of the template I. According to the accompanying information H0, the template I has two image insertion areas (1) and (2). The image insertion area (1) is related to a recommended composition ID (Fa1) of a composition number 1 at a location a, or to a recommended composition ID (Fc1) of the composition number 1 at a location c. The image insertion area (2) is related to a recommended composition ID (Fb1) of the composition number 1 at a location b, or to a

recommended composition ID (Fd1) of the composition number 1 at a location d. A recommended season and recommended weather are related to all seasons (all) and all types of weather (all).

Meanwhile, the accompanying information H0 of a template VI is as shown in Figure 15. According to the accompanying information H0, the template VI has one image insertion area (1). The image insertion area (1) is related to a recommended composition ID (Ff1) of the composition number 1 at a location f in rain or fine weather (w = r or s [weather = rain or sunny]) in winter (s=w [season=winter]), or to a recommended composition ID (Fa3) of a composition number 3 at the location a in fine weather (w = s [weather = sunny]) in winter (s = w [season = winter]).

In the third embodiment, a photographer recorded six image data sets S0 in a recording medium 11 by photographing using the recommended composition 1 at locations a, b, c, d, e, and f. In this case, recommended composition IDs Fa1, Fb1, Fc1, Fd1, Fe1, and Ff1 are added to the image data sets S0 as the accompanying information H. The data reading means 21 reads the six image data sets S0 and the accompanying information H added thereto, and the accompanying information H is input to the template selecting means 25. The template selecting means 25 reads two templates I and III from the template storing means 22 based on the accompanying information H, and inputs the templates to the temporary template storing means 26. At the time of generating the composite image data, the template

I is used twice. Composition means 23 generates the composite image data M representing an album comprising three pages, based on the two templates I, the template III and six image data sets S0.

5 In this case, images whose recommended composition numbers are 1 at the locations a and b are respectively inserted in the image insertion areas (1) and (2) of the template I, while images whose recommended composition numbers are 1 at the locations c and d are inserted in the image insertion areas (1) and (2) of the other template I. Images whose recommended composition numbers are 1 at the locations e and f are also inserted in the image insertion areas (1) and (2) of the template III.

10
15
20
25 Meanwhile, if the photographer records seven image data sets S0 in the recording medium 11 by photographing at the locations a and b according to the recommended composition 1, at the location d according to recommended compositions 1, 2, and 3, and at a location g according to the recommended compositions 1 and 2. In this case, the template selecting means 25 reads three templates I, II, and III from the template storing means 22, and the templates are temporarily stored in the temporary template storing means 26. The composition means 23 generates the composite image data M representing the album having three pages, based on the three templates I, II, and III, and the seven image data sets S0.

In this case, images whose recommended composition numbers

are 1 at the locations a and b are respectively inserted in the image insertion areas (1) and (2) of the template I, while images whose recommended composition numbers are 2, 1, and 3 at the location d are respectively inserted in the image insertion areas (1), (2), and (3) of the template II. Images whose recommended composition numbers are 2 and 1 at the location g are also inserted in the image insertion areas (1) and (2) of the template III.

The template T may simply be selected based on the recommended composition ID. However, some combinations of templates are not preferable with regard to layout. In this case, it is preferable for the undesired combinations (or preferable combinations) to be stored in a memory (not shown) of the template selecting means 25 so that the undesired template combinations cannot be selected.

In the above embodiment, photographing is carried out to cause the image to agree with the recommended composition based on the GPS information G. However, instead of the GPS information G, global position information judged by a PHS reception area may be used for the photographing.

In the above embodiments, the image data sets S0 and the accompanying information H are recorded in the recording medium 11 and provided for album generation. However, the image data sets S0 and the accompanying information H thereof may be stored in the personal computer of the user so that the image data sets S0 and the accompanying information H can be read from

